

Remarks:

Applicant respectfully requests reconsideration of the Office action dated August 19, 2004 in view of the foregoing amendments and following remarks. Claims 1-19 were pending in the present application prior to the Office action. Claims 1-6, 8-15 and 17-19 were variously rejected in the Office action under 35 U.S.C. §§ 102 and 103, based on two references: (1) U.S. Pub. 2003/0198251A1 to Black et al., and (2) U.S. Pat. No. 6,000,020 to Chin et al. Claims 7 and 16 were indicated as containing allowable subject matter, but objected to as being dependent upon a rejected base claim.

Claim 1 and its Dependent Claims 2-8

Claims 1-3, 5-6 and 8 were rejected under 35 U.S.C. § 102(e) as being anticipated by Black et al. (U.S. Pub. 2003/0198251 A1). Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Black et al. in view of Chin et al. (U.S. Pat. No. 6,000,020). Claim 7 was indicated as containing allowable subject matter, but objected to as being dependent upon a rejected base claim.

Applicant respectfully disagrees with the rejection of claim 1, but has nonetheless amended claim 1 to further highlight the differences between the present invention and the cited Black et al. reference. Claim 1 recites an intra-loop router that couples together segments of a fibre channel arbitrated loop. The intra-loop router includes a router controller coupled to the arbitrated loop segments, and a processor configured to cause received fibre channel frames to be re-transmitted onto a selected one of the segments.

As discussed at length in the specification, this selective routing of fibre channel frames reduces propagation delay by avoiding or bypassing unnecessary

portions of the fibre channel arbitrated loop. Without such routing, data flows in daisy-chain fashion through all of the nodes on the loop that are interposed between the source and destination devices. As now recited in amended claim 1, the re-transmission by the recited processor reduces propagation delay in the event that a source device and destination device reside on the same segment of the fibre channel arbitrated loop.

The Black et al. reference describes a system that attempts to solve a very different problem. While the present application is concerned with segmenting an arbitrated loop to reduce propagation delay, Black et al. focuses on increasing throughput in a fibre channel network by enabling multiple "conversations" to occur simultaneously (see ¶0072 of Black et al.). Applicant is concerned with increasing the efficiency of an individual "conversation" (e.g., by reducing propagation delay). Black et al. tackles the very different problem of increasing efficiency by enabling multiple, simultaneous conversations.

Because Black et al. is concerned with a different problem, the Black et al. system has a very different topology and structure than the system claimed by applicant. Instead of an intra-loop router with a processor that selectively routes fibre channel frames to selected loop segments to reduce propagation delay, Black et al. employs a centralized switch and multiple bridges to enable multiple conversations to occur at the same time (see Fig. 2 of Black et al.).

Also, unlike the system of claim 1, which recites a processor, the Black et al. reference explicitly states that it does not include a processor. Specifically, at ¶0073, the Black et al. reference discusses that the objective of multiple conversations is achieved without a microprocessor. The background section of the reference further

discusses the disadvantages of using a processor to perform switching functions, further teaching away from applicant's claimed use of a processor.

Accordingly, because the Black et al. reference discloses a system that addresses a very different problem than that faced by applicant, and because it does not disclose each and every limitation of amended claim 1, applicant respectfully submits that claim 1 is allowable and requests withdrawal of the rejection. Claims 2-6 and 8 depend from claim 1, either directly or via intervening claims, and are therefore also allowable for at least the reasons stated above.

Claim 9 and its Dependent Claims 10-18

Claims 9, 11-12, 14-15, and 17-18 were rejected under 35 U.S.C. § 102(e) as being anticipated by Black et al. Claims 10 and 13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Black et al. in view of Chin et al. Claim 16 was indicated as containing allowable subject matter, but objected to as being dependent upon a rejected base claim.

Claim 9 has been amended similarly to claim 1, to clarify that the system is configured to reduce propagation delay in the event that source and destination devices reside on the same FC-AL segment. As discussed above and at length in applicant's specification, this reduction in delay arises from the fact that loop segmentation coupled with intra-loop routing among the segments allows unnecessary portions of the arbitrated loop to be bypassed. Thus, for reasons similar to those stated above with respect to claim 1, applicant submits that claim 9 is allowable and requests withdrawal of the rejection. Claims 10-15 and 17-18 depend from claim 9, either directly or via intervening claims, and are therefore also allowable for at least the reasons stated above.

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Claim 19

Claim 19 stands rejected under 35 U.S.C. § 102(e) as being anticipated by Chin et al. Applicant respectfully disagrees with this rejection, because Chin et al. does not teach or suggest each and every limitation of claim 19. Specifically, applicant's claim 19 specifies that one individual fibre channel arbitrated loop is segmented into multiple segments, and that an intra-loop router is used to selectively route frames to avoid unnecessary data flows on segments of the loop that are not needed for the transaction. As discussed above, this reduces propagation delay.

In contrast, the bridges disclosed by Chin et al. (see Figs. 1-3) are not used to segment a single arbitrated loop, but rather to connect multiple distinct fibre channel arbitrated loops together. Also, like Black et al., Chin et al. is addressed to the problem of achieving efficiency by enabling more than one transaction to occur at a time within a fibre channel network (see col. 2, lines 33-45 of the Chin et al.). As discussed above, this problem is very different from the problem faced by applicant, namely, the problem of reducing the delays that result on a single loop as a result of daisy-chain data flow.

For the reasons stated above, applicant submits that Chin et al. does not teach or suggest every limitation of claim 19, and requests that the rejection be withdrawn.

New Claims 20 and 21

Based on the indication that claims 7 and 16 contain allowable subject matter, new independent claims 20 and 21 are presented by the foregoing amendment. New claim 20 is in independent form and includes all the limitations of claims 1, 3 and 7, and should thus be in condition for allowance. New claim 21 includes is in

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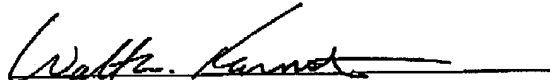
Independent form and includes all the limitations of claims 9, 12 and 16, and should thus be in condition for allowance.

Conclusion

Applicant believes that this application is now in condition for allowance, in view of the above amendments and remarks. Accordingly, applicant respectfully requests that the Examiner issue a Notice of Allowability covering the pending claims. If the Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, please contact the undersigned attorney of record.

Respectfully submitted,

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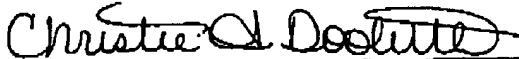
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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to Examiner A. Ly, Group Art Unit 2667, Assistant Commissioner for Patents, at facsimile number (703) 872-9306 on November 10, 2004.



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